

PRENATAL MERCURY EXPOSURE AND ANTHROPOMETRIC MEASURES AT BIRTH

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Background and Aims: Prenatal exposure to high levels of mercury has been associated with adverse reproductive outcomes. However, results are inconsistent regarding if moderate chronic exposure, mainly due to elevated fish consumption, has an effect on newborn anthropometry. To assess the association between prenatal mercury exposure and anthropometric measures at birth in a multicenter population based birth cohort.

Methods: Between 2004 and 2008, 2506 mothers gave a live birth in the context of a mother and child cohort study (INMA) in four Spanish areas (Valencia, Sabadell, Asturias, and Gipuzkoa). The study population included 1886 children with available T-Hg determination in cord blood samples. Maternal characteristics and estimated fish intake were obtained through questionnaires. Birth weight, length and head circumference were standardized for gestational age by sex. The association between T-Hg and anthropometry was ascertained using linear and logistic regression and meta-analysis.

Results: Overall, T-Hg (geometric mean 8.2 µg/L) was not significantly associated with birth outcomes; however, all models showed negative patterns and adjustment for fish intake groups decreased the coefficients in all of them. The effect of T-Hg on birth weight was heterogeneous between cohorts (I²>50%): higher T-Hg levels were significantly associated with lower birth weight in the Mediterranean areas (Valencia and Sabadell), but not in the Atlantic ones (Asturias and Gipuzkoa). Higher T-Hg was also related with lower birth length in Sabadell. When T-Hg was categorized in quartiles, the main differences were found between the first (<5 µg/L) and the fourth quartile (≥15 µg/L).

Conclusions: Prenatal exposure to Hg may be related with restricted size at birth. Heterogeneity in the relation between mercury exposure and birth weight deserves further investigation.

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